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EXAMINER	
LE, HIEN	
ART UNIT	PAPER NUMBER
3662	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,919	ZIMMERMAN, MARTIN	
	Examiner	Art Unit	
	Hien Le	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/13/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20,22,25,28 and 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20,22,25,28 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 October 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/13/2004 and 12/29/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of group I in filed 10/711919 is acknowledged.

Claims **21, 23-24, 26-27, and 30-41** are withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected invention.

Election was made without traverse filed on December 29, 2006.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: a module 10 and a wiper in FIG 1; a wiper 16 and a backplane side in FIG. 2a; a backplane side 21 in FIG. 2b. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required

corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

On the paragraph 50, line 3-4, the sentence: " Each main PCB 13 pair may be arranged backplane side 21 to backplane side 21" is not clearly defined.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims **1-2, 4-20, 22, 25, and 28-29** are rejected under 35 U.S.C. 103(a) as being unpatentable by **Gottl et al. (U.S. patent # 6,850,130),** and in view of **Phillips et al. (U.S. Patent # 2003/0076198)**.

Considering **claim 1**, Gottl disclose the limitations of a variable phase shifter module, comprising:

- A first main PCB having an input trace coupled to a first wiper junction. See FIG.2. " The feed line 13 passes from the feed input 5 to a center tap 29" (column 4, line 21-23).
- A first arcuate trace extending between a first output trace and a second output trace on the first main PCB. See FIG.2. Two diploes 1c and 1b are connected to the inner stripline 21a.
- The first arcuate trace having an arc center proximate the first wiper junction. " An inner stripline segment 21a and an outer stripline segment 21b are arranged concentrically around a common center point in a plane view and through which a vertical pivoting axis 23 runs at right angles to the plane of the drawing' (column 4, line 8-12).

Gottl et al. fail to disclose the limitations of a variable phase shifter module, comprising a first wiper PCB having a linking trace, the first wiper PCB rotatably coupled to the first main PCB proximate the first wiper junction with the linking trace facing the first main PCB, and The linking trace coupling the first wiper junction with the first arcuate trace.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, comprising:

- A first wiper PCB having a linking trace thereon. " The phase shifter can also include support traces that are positioned on the area as well as on a planar support structure that includes the feed lines that engage with the coupling ring and wiper element" (column 2, paragraph 0013).

Therefore, it would have been obvious to one skilled in the art that the support traces in the reference is understood as the linking trace for a first wiper PCB because the support traces engages with the wiper element.

Doing so would motivate the limitations of a variable phase shifter module, comprising a first wiper PCB having a linking trace.

- The first wiper PCB rotatably coupled to the first main PCB proximate the first wiper junction with the linking trace facing the first main PCB. " The support traces can help facilitate smooth rotation of the phase shifter by providing opposing forces relative to the forces generated as the wiper element of the coupling arm moves over an output feed line" (column 2, paragraph 0013).

Therefore, it would have been obvious to one skilled in the art that the wiper element of the coupling arm in the reference is understood as the first wiper PCB rotatably coupled to the first main PCB proximate the first wiper junction with the linking trace facing the first main PCB. When the phase shifter rotates, the wiper element in the reference also rotates and opposes forces from the linking trace facing surface.

Doing so would motivate the limitations of a variable phase shifter module; comprising the first wiper PCB rotatably coupled to the first main PCB proximate the first wiper junction with the linking trace facing the first main PCB.

- The linking trace coupling the first wiper junction with the first arcuate trace. " The wiper element 1005 can comprise an arc shaped member" (column 3, paragraph 0055).

Considering **claim 2**, Gottl disclose the limitations of a variable phase shifter module, further including:

- A second arcuate trace extending between a third output trace and a fourth output trace. See FIG.2b. Two diploes 1a and 1d are connected to the outer stripline 21b.
- The second arcuate trace having an arc center proximate the first wiper junction. " An inner stripline segment 21a and an outer stripline segment 21b are arranged concentrically around a common center point in a plane view and through which a vertical pivoting axis 23 runs at right angles to the plane of the drawing' (column 4, line 8-12).

Considering **claim 4**, Gottl et al. disclose the limitations of a variable phase shifter module, further including:

- An arcuate edge guide surface formed in the first main PCB having an arc center proximate the first wiper junction. See FIG.2. " Stripline segment 21a includes ends 39a, 39a' which connect to antenna elements 1c, 1b through connections 41c, 41b, 41a" (column 4, line 39-42).
- A clip coupled to the wiper to bias the first wiper PCB against the first main PCB, about the arcuate edge guide surface. " Low-loss dielectric 37 provide the capacitive coupling and, at the same time, provide the mechanical fixing both for the center tap 29 and for the tapping points 27a, 27b which are radially offset respect to it" (column 4, line 49-53).

Considering **claim 5**, Gottl et al. disclose the limitations of a variable phase shifter module; further including an arcuate guide slot formed in the first main PCB having an arc center proximate the first wiper junction. " Tapping element 25 forms a coupled tapping section or tapping point 27 in the respective area in which it overlaps an associated stripline segment 21" (column 4, line 15-18).

Gottl et al. fail to disclose the limitations of a variable phase shifter module, including a fastener extending through the guide slot and a guide hole formed in the first wiper PCB to bias the wiper against the first main PCB.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, including a fastener extending through the guide slot and a guide hole formed in the first wiper PCB to bias the wiper against the first main PCB. " A support architecture that fastens the phase shifter to a substantially planar surface while permitting rotation of certain components of the phase shifter relative to the planar surface", and " The coupling arm 200 can further comprise secondary apertures 1020 that can receive a fastening mechanism, if desired, to connect the coupling arm 200 to a key 210" (column 4, paragraph 0058).

Therefore, it would have been obvious to one skilled in the art that the phase shifter device in the reference includes the fastening mechanism to connect the coupling arm to a key which is equivalent a fastener extending through the guide slot and a guide hole formed in the first wiper PCB to bias the wiper against the first main PCB.

Doing so would motivate the limitations of a variable phase shifter module, including a fastener extending through the guide slot and a guide hole formed in the first wiper PCB to bias the wiper against the first main PCB.

Considering **claim 6**, Gottl et al. disclose the limitations of a variable phase shifter module, wherein the first output trace and second output trace have a width and length selected to provide a desired power division and pre-set phase shift differential. " Suitable selection of the characteristic impedances and suitable region of the connections 31a and 31b between the corresponding tapping points 29 as well as tapping points 27a and 27b, respectively, now allows the power to be shared at the same time between the dipole radiating elements 1a and 1d, on the other hand, and the further pair of dipole radiating elements 1b and 1c" (column 5, line 8-15)

Therefore, it would have been obvious to one skilled in the art that the suitable region of the connections between the corresponding tapping point in the reference is understood as a width and length selected to provide a desired power division and pre-set phase shift differential.

Doing so would motivate the limitations of a variable phase shifter module, wherein the first output trace and second output trace have a width and length selected to provide a desired power division and pre-set phase shift differential.

Considering **claim 7**, Gottl et al. disclose the limitations of a variable phase shifter module, wherein the first wiper PCB has a dielectric coating. " Above a dielectric conical section 37a which has a greater axis height. The coupling layer 33, through which, like the center tap 29, the pivoting axis 23

likewise passes, is located above this, separated by a relatively thin dielectric conical layer 37b" (column 4, line 55-60)

Gottl et al. fail to disclose the limitation of a variable phase shifter module, wherein one of the first main PCB and both of the first main PCB have a dielectric coating.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, wherein one of the first main PCB and both of the first main PCB have a dielectric coating. " The planar surface 140 in one exemplary embodiment preferably comprises a dielectric material with a dielectric constant of approximately 3.38" (column 4, paragraph 0062).

In the same endeavor of art, it would have been obvious to teach the limitations of a variable phase shifter module, wherein one of the first main PCB, the first wiper PCB and both of the first main PCB and the first wiper PCB have a dielectric coating.

Doing so would motivate the limitation of a variable phase shifter module, wherein one of the first main PCB, the first wiper PCB and both of the first main PCB and the first wiper PCB have a dielectric coating.

Considering **claim 8**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, further including: a second main PCB with a second wiper PCB coupled proximate a second wiper junction, the wiper rotatably coupled to the second printed circuit board proximate the second wiper junction, and the first wiper junction and the second wiper junction aligned in a spaced apart coaxial orientation.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, further including:

- A second main PCB with a second wiper PCB coupled proximate a second wiper junction. " The phase shifter can comprise two separate coupling arms that have separate wiper elements...The phase shifter can be further modified from use its various embodiments to control the phase for multiple layers of feed lines disposed in different planar surfaces" (column 2, paragraph 0021)
- The wiper rotatably coupled to the second printed circuit board proximate the second wiper junction, and the first wiper junction and the second wiper junction aligned in a spaced apart coaxial orientation. See FIG.4. This figure illustrates an exemplary alternative embodiment where a coupling arm comprises two wiper elements 1005A, 1005B. Each respective wiper element 1005A, 1005B is designed to be coupled to one of two feed lines 120B1, 120B2.

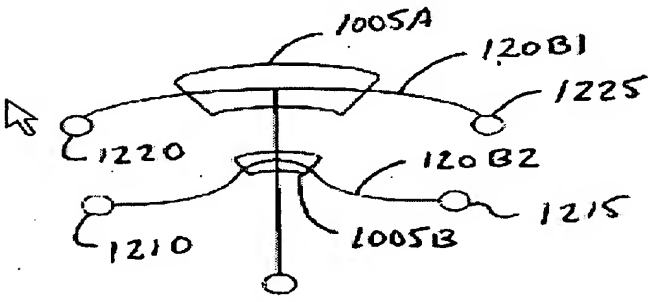


FIG. 4

Therefore, it would have been obvious to teach the limitations of two wiper elements in the reference, which are rotatably coupled to the second surface planar, and their junctions, aligned in a spaced apart coaxial orientation.

Doing so would motivate the limitations of a variable phase shifter module, further including: a second main PCB with a second wiper PCB coupled proximate a second wiper junction, the wiper rotatably coupled to the second printed circuit board proximate the second wiper junction, and the first wiper junction and the second wiper junction aligned in a spaced apart coaxial orientation.

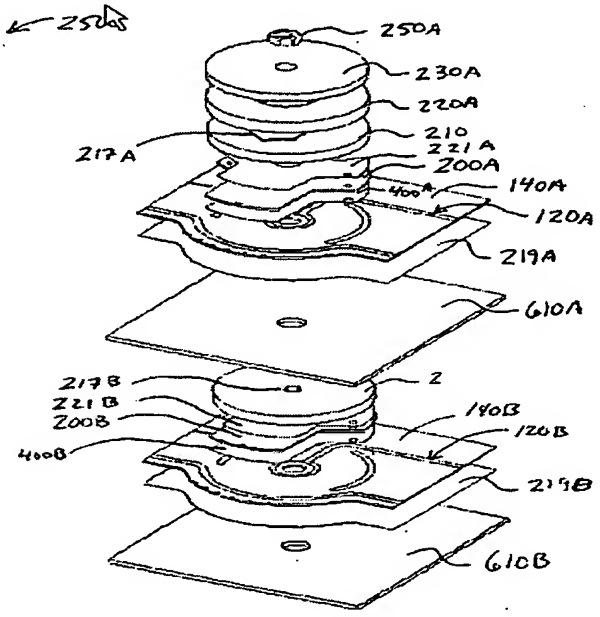
Considering **claim 9**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, wherein the first wiper PCB and the second wiper PCB are coupled together, commonly movable via a linkage arrangement.

However, Philips et al. successfully disclose the limitation of a variable phase shifter module, wherein the first wiper PCB and the second wiper PCB are coupled together, commonly movable via a linkage arrangement. See FIG. 13. " A phase shifter 100 that comprises a first coupling arm 200A and a second coupling arm 200B that are coupled to the same shaft 245 but on different geometrical plnae4s relative to each other " (column 8, paragraph 0115).

Therefore, it would have been obvious to teach the two wiper elements in the reference are coupled together and movable via a shaft (a linking arrangement).

Doing so would motivate the limitations of a variable phase shifter module, wherein the first wiper PCB and the second wiper PCB are coupled together, commonly movable via a linkage arrangement.

Considering **claim 10**, disclose the limitations of a variable phase shifter module, wherein the linkage arrangement is a linkage pin joining the a first clip, coupled to the first wiper to bias the first wiper PCB against the first main PCB, to the a second clip, coupled to the second wiper to bias the second wiper PCB against the second main PCB, the linkage pin passing through a linkage slot formed in a linkage plate of a linkage arm. See FIG 13. 120A and 120B are the feed lines. 610A and 610B are conductive supporting traces. The first coupling arm 200A can control the phase of RF energy propagating within the first feed lines 120A supported by the planar surface 140A.



Therefore, it would have been obvious to one skilled in the art to teach the limitations of a variable phase shifter module, wherein the linkage arrangement is a linkage pin joining the a first clip, coupled to the first wiper to bias the first wiper PCB against the first main PCB, to the a second clip, coupled to the second wiper to bias the second wiper PCB against the second main PCB, the linkage pin passing through a linkage slot formed in a linkage plate of a linkage arm.

Doing so would motivate the limitations of a variable phase shifter module, wherein the linkage arrangement is a linkage pin joining the a first clip, coupled to the first wiper to bias the first wiper PCB against the first main PCB, to the a second clip, coupled to the second wiper to bias the second wiper PCB against the second main PCB, the linkage pin passing through a linkage slot formed in a linkage plate of a linkage arm. The two feed lines 120A and 120B are facing on the

Considering **claim 11**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled and a trace side of the first PCB and of the second PCB each facing the baseplate.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled and a trace side of the first PCB and of the second PCB each facing the baseplate. See FIG 13. 120A and 120B are the feed lines. 610A and 610B are conductive supporting traces. The first coupling arm 200A can control the phase of RF energy propagating within the first feed lines 120A

supported by the planar surface 140A. Similarly, the second coupling arm 200B can control the phase of the RF energy propagating within the second feed lines 120B on the second planar surface 140B. (Column 8, paragraph 0115).

Therefore, it would have been obvious to teach the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled and a trace side of the first PCB and of the second PCB each facing the conductive supporting traces 610A and 610B.

Doing so would motivate the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled and a trace side of the first PCB and of the second PCB each facing the baseplate.

Considering **claim 12**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled, and a trace side of the first PCB and of the second PCB arranged facing away from each other.

However, Phillips et al. successfully discloses the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled, and a trace side of the first PCB and of the second PCB arranged facing away from each other. See FIG 13. 120A and 120B are the feed lines. 610A and 610B are conductive supporting traces. The first coupling arm 200A can control the phase of RF energy propagating within the first feed lines 120A supported by the planar surface 140A. Similarly, the second coupling arm 200B can control the phase of the RF energy propagating within the second

feed lines 120B on the second planar surface 140B. (Column 8, paragraph 0115).

Therefore, it would have been obvious to teach the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled, and a trace side of the first PCB and of the second PCB arranged facing away from each other because the two conductive supporting traces 610A and 610B are separated partly as seen in FIG. 13.

Doing so would motivate the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled, and a trace side of the first PCB and of the second PCB arranged facing away from each other.

Considering **claim 13**, Gottl et al. disclose the limitations of a variable phase shifter module, further including:

- An arcuate edge guide surface formed in the first main PCB having an arc center proximate the first wiper junction. See FIG.2. " Stripline segment 21a includes ends 39a, 39a' which connect to antenna elements 1c, 1b through connections 41c, 41b, 41a" (column 4, line 39-42).
- A clip coupled to the wiper to bias the wiper against the first main PCB, about the arcuate edge guide surface. " Low-loss dielectric 37 provide the capacitive coupling and, at the same time, provide the mechanical fixing both for the center tap 29 and for the tapping points 27a, 27b which are radially offset respect to it" (column 4, line 49-53).

Considering **claim 14**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, wherein the wiper PCB has an epoxy glass substrate.

However, Phillips et al. successfully discloses the limitations of a variable phase shifter module, wherein the wiper PCB has an epoxy glass substrate. " The coupling arm 200 in one exemplary embodiment has a dielectric support 1015 that can comprise a rigid material such as a printed circuit board, plastic, or a ceramic material.

Therefore, it would have been obvious to teach the limitations of a variable phase shifter module, wherein the wiper PCB has an epoxy glass substrate because an epoxy glass substrate is well known to the ordinary skilled in the art as a plastic material.

Doing so would motivate the limitations of a variable phase shifter module, wherein the wiper PCB has an epoxy glass substrate.

Considering **claim 15**, Gottl et al. fails to disclose the limitations of a variable phase shifter module, wherein the wiper PCB has a linkage slot formed in a distal end.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, wherein the wiper PCB has a linkage slot formed in a distal end. See FIG.6. " The phase shifter 100 comprises a coupling arm 200, a key 210, a spring 220, a washer 230. These elements are held together by a support architecture 240 that can comprise a shaft 245 and a nut 250" (column 6, paragraph 0087).

Therefore, it would have been obvious to one skill in the art that support architecture in the reference is understood as distal end. Thus, Philips et al. implicitly disclose the limitations of a variable phase shifter module, wherein the wiper PCB has a linkage slot formed in a distal end.

Doing so would motivate the limitation of a variable phase shifter module, wherein the wiper PCB has a linkage slot formed in a distal end.

Considering **claim 16**, Gottl et al. disclose the limitations of a variable phase shifter module, comprising:

- A first main PCB having an input trace coupled to a first wiper junction. " The feed line 13 passes from the feed input 5 to a center tap 29" (column 4, line 21-23).
- A first arcuate trace extending between a first output trace and a second output trace on the first main PCB. See FIG.2. Two diploes 1c and 1b are connected to the inner stripline 21a.
- The first arcuate trace having an arc center proximate the first wiper junction. " An inner stripline segment 21a and an outer stripline segment 21b are arranged concentrically around a common center point in a plane view and through which a vertical pivoting axis 23 runs at right angles to the plane of the drawing' (column 4, line 8-12).
- A second arcuate trace extending between a third output trace and a fourth output trace. See FIG.2b. Two diploes 1a and 1d are connected to the outer stripline 21b.

- The second arcuate trace having an arc center proximate the first wiper junction. " An inner stripline segment 21a and an outer stripline segment 21b are arranged concentrically around a common center point in a plane view and through which a vertical pivoting axis 23 runs at right angles to the plane of the drawing' (column 4, line 8-12).

Gottl et al. fail to disclose the limitations of a variable phase shifter module, comprising a first wiper PCB having a linking trace, the first wiper PCB rotatably coupled to the first main PCB proximate the first wiper junction with the linking trace facing the first main PCB, and The linking trace coupling the first wiper junction with the first arcuate trace.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, comprising:

- A first wiper PCB having a linking trace thereon. " The phase shifter can also include support traces that are positioned on the area as well as on a planar support structure that includes the feed lines that engage with the coupling ring and wiper element" (column 2, paragraph 0013).

Therefore, it would have been obvious to one skilled in the art that the support traces in the reference is understood as the linking trace for a first wiper PCB because the support traces engages with the wiper element.

Doing so would motivate the limitations of a variable phase shifter module, comprising a first wiper PCB having a linking trace.

- The first wiper PCB rotatably coupled to the first main PCB proximate the first wiper junction with the linking trace facing the first main PCB. " The support traces can help facilitate smooth rotation of the phase shifter by providing opposing forces relative to the forces generated as the wiper element of the coupling arm moves over an output feed line" (column 2, paragraph 0013).

Therefore, it would have been obvious to one skilled in the art that the wiper element of the coupling arm in the reference is understood as the first wiper PCB rotatably coupled to the first main PCB proximate the first wiper junction with the linking trace facing the first main PCB. When the phase shifter rotates, the wiper element in the reference also rotates and opposes forces from the linking trace facing surface.

Doing so would motivate the limitations of a variable phase shifter module; comprising the first wiper PCB rotatably coupled to the first main PCB proximate the first wiper junction with the linking trace facing the first main PCB.

- The linking trace coupling the first wiper junction with the first arcuate trace. " The wiper element 1005 can comprise an arc shaped member" (column 3, paragraph 0055).
- An arcuate edge guide surface formed in the first main PCB having an arc center proximate the first wiper junction. See FIG.2. " Stripline segment 21a includes ends 39a, 39a' which connect to antenna elements 1c, 1b through connections 41c, 41b, 41a" (column 4, line 39-42).

- A clip coupled to the wiper to bias the first wiper PCB against the first main PCB, about the arcuate edge guide surface. " Low-loss dielectric 37 provide the capacitive coupling and, at the same time, provide the mechanical fixing both for the center tap 29 and for the tapping points 27a, 27b which are radially offset respect to it" (column 4, line 49-53).

Considering **claim 17**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, further including Gottl et al. fail to disclose the limitations of a variable phase shifter module, further including: a second main PCB with a second wiper PCB coupled proximate a second wiper junction, the wiper rotatably coupled to the second printed circuit board proximate the second wiper junction, the first wiper junction and the second wiper junction aligned in a spaced apart coaxial orientation, and the first wiper PCB and the second wiper PCB are coupled together.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, further including:

- A second main PCB with a second wiper PCB coupled proximate a second wiper junction. " The phase shifter can comprise two separate coupling arms that have separate wiper elements...The phase shifter can be further modified from use its various embodiments to control the phase for multiple layers of feed lines disposed in different planar surfaces" (column 2, paragraph 0021)
- The wiper rotatably coupled to the second printed circuit board proximate the second wiper junction, and the first wiper junction and

the second wiper junction aligned in a spaced apart coaxial orientation. See FIG.4. This figure illustrates an exemplary alternative embodiment where a coupling arm comprises two wiper elements 1005A, 1005B. Each respective wiper element 1005A, 1005B is designed to be coupled to one of two feed lines 120B1, 120B2.

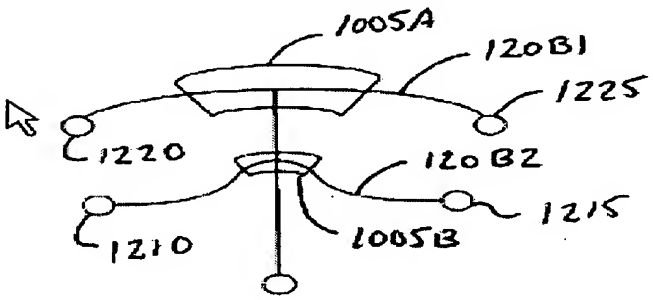


FIG. 4

Therefore, it would have been obvious to teach the limitations of two wiper elements in the reference, which are rotatably coupled to the second surface planar, and their junctions, aligned in a spaced apart coaxial orientation.

Doing so would motivate the limitations of a variable phase shifter module, further including: a second main PCB with a second wiper PCB coupled proximate a second wiper junction, the wiper rotatably coupled to the second printed circuit board proximate the second wiper junction, and the first wiper junction and the second wiper junction aligned in a spaced apart coaxial orientation.

Furthermore, Philips et al. successfully disclose the limitation of a variable phase shifter module, wherein the first wiper PCB and the second wiper PCB are coupled together. See FIG. 13. " A phase shifter 100 that comprises a first coupling arm 200A and a second coupling arm 200B that are coupled to the same shaft 245 but on different geometrical plnae4s relative to each other " (column 8, paragraph 0115).

Therefore, it would have been obvious to teach the two wiper elements in the reference are coupled together and movable via a shaft (a linking arrangement).

Doing so would motivate the limitations of a variable phase shifter module, wherein the first wiper PCB and the second wiper PCB are coupled together, commonly movable via a linkage arrangement.

Considering **claim 18**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled and a trace side of the first PCB and of the second PCB each facing the baseplate.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled and a trace side of the first PCB and of the second PCB each facing the baseplate. See FIG 13. 120A and 120B are the feed lines. 610A and 610B are conductive supporting traces. The first coupling arm 200A can control the phase of RF energy propagating within the first feed lines 120A supported by the planar surface 140A. Similarly, the second coupling arm 200B

can control the phase of the RF energy propagating within the second feed lines 120B on the second planar surface 140B. (Column 8, paragraph 0115).

Therefore, it would have been obvious to teach the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled and a trace side of the first PCB and of the second PCB each facing the conductive supporting traces 610A and 610B.

Doing so would motivate the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled and a trace side of the first PCB and of the second PCB each facing the baseplate.

Considering **claim 19**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled, and a trace side of the first PCB and of the second PCB arranged facing away from each other.

However, Phillips et al. successfully discloses the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled, and a trace side of the first PCB and of the second PCB arranged facing away from each other. See FIG 13. 120A and 120B are the feed lines. 610A and 610B are conductive supporting traces. The first coupling arm 200A can control the phase of RF energy propagating within the first feed lines 120A supported by the planar surface 140A. Similarly, the second coupling arm 200B can control the phase of the RF energy propagating within the second

feed lines 120B on the second planar surface 140B. (Column 8, paragraph 0115).

Therefore, it would have been obvious to teach the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled, and a trace side of the first PCB and of the second PCB arranged facing away from each other because the two conductive supporting traces 610A and 610B are separated partly as seen in FIG. 13.

Doing so would motivate the limitations of a variable phase shifter module, further including a base plate to which the first PCB and second PCB are coupled, and a trace side of the first PCB and of the second PCB arranged facing away from each other.

Considering **claim 20**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, further including a linkage slot formed in the distal end of the first wiper PCB.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, further including a linkage slot formed in the distal end of the first wiper PCB. See FIG.6. " The phase shifter 100 comprises a coupling arm 200, a key 210, a spring 220, a washer 230. These elements are held together by a support architecture 240 that can comprise a shaft 245 and a nut 250" (column 6, paragraph 0087).

Therefore, it would have been obvious to one skill in the art that a support architecture in the reference is understood as the distal end. Thus, Philips et al.

implicitly disclose the limitations of a variable phase shifter module, wherein the wiper PCB has a linkage slot formed in a distal end.

Doing so would motivate the limitation of a variable phase shifter module, further including a linkage slot formed in the distal end of the first wiper PCB.

Considering **claim 22**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, wherein the linking trace is located on a side of the first wiper PCB facing the first arcuate trace.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, wherein the linking trace is located on a side of the first wiper PCB facing the first arcuate trace." The wiper element 1005 can comprise an arc shaped member" (column 3, paragraph 0055).

Therefore, it would have been obvious to teach the limitations of a variable phase shifter module, wherein the linking trace is located on a side of the first wiper PCB facing the first arcuate trace.

Considering **claims 25 and 29**, Gottl et al. fail to disclose the limitations of a variable phase shifter module, wherein said dielectric coating is composed of soldermask or an organic compound.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, wherein said dielectric coating is composed of soldermask or an organic compound. " A combination of solder mask and a dielectric material could also be used" (column 5, paragraph 0075), and " Segments of a dielectric material, or a solder mask, or a combination of those two can be used" (column 5, paragraph 0076).

Therefore, it would have been obvious to one skilled in the art to teach the limitations of a variable phase shifter module, wherein said dielectric coating is composed of soldermask or an organic compound.

Doing so would motivate the limitations of a variable phase shifter module, wherein said dielectric coating is composed of soldermask or an organic compound.

Considering **claim 28**, Gottl et al. fails to disclose the limitations of a variable phase shifter module, wherein said linking trace has a coating composed of dielectric material.

However, Phillips et al. successfully disclose the limitations of a variable phase shifter module, wherein said linking trace has a coating composed of dielectric material. " Support traces 405A can be constructed from dielectric materials"

Therefore, it would have been obvious to teach the limitations of a variable phase shifter module, wherein said linking trace has a coating composed of dielectric material.

Doing so would motivate the limitations of a variable phase shifter module, wherein said linking trace has a coating composed of dielectric material.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Gottl et al. (U.S. patent # 6,850,130),** modified by **Phillips et al. (U.S. Patent # 2003/0076198),** as applied to claims **1-2, 4-20, 22, 25, and 28-29** above, further in view of **Huynh et al. (U.S. Patent # 5,917,455).**

Considering **claim 3**, Gottl et al., as modified by Phillips et al., fail to disclose the limitations of a variable phase shifter module, further including a fifth output trace coupled to the first wiper junction.

However, Huynh et al. successfully disclose the limitations of a variable phase shifter module, further including a fifth output trace coupled to the first wiper junction. See FIG. 1. " The backplane 111 also provides a mounting surface for an RF connector 109, the phase adjustment mechanism 108, and a plurality of dielectric-subtrated microstrip transformers 112-114 used as power dividers, and the transmission lines that interconnected the antenna assembly components (1105-1110 in FIG. 11)" (column 4, line 23-29), and " The phase adjustment mechanism 108, illustrated in FIG.3 through FIG.5, includes input coupling means such as an input coupling element 301 formed in T shape from a plate of conductive material...the input coupling element 301 is electromagnetically coupled to movable coupling means, such as a movable coupling section 302" (column 4, line 54-67).

Therefore, it would have been obvious to one skilled in the art that the movable coupling section in the reference is understood as the first wiper junction, and a fifth output trace in the reference is also connected to the movable coupling section which means coupled to the first wiper junction.

Doing so would motivate the limitations of a variable phase shifter module, further including a fifth output trace coupled to the first wiper junction.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Le whose telephone number is 571-270-1326. The examiner can normally be reached on M-F: 7:30am- 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrell McKinnon can be reached on 571-272-4797. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patent Examiner

Hien le

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